

Захист довкілля Чорного моря в рамках
конвенції про захист Чорного моря від
забруднення

Protection of the Black Sea environment within
the framework of
Convention on the Protection of the Black Sea
Against Pollution

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Chairmanship of the Commission

Mr. Roman SHAKHMATENKO, Deputy
Minister, Ministry of Environmental
Protection and Natural Resources of
Ukraine

The Bucharest Convention on the Protection of the Black Sea against Pollution adopted in 1992

- The Convention on the Protection of the Black Sea against Pollution (also referred to as "Bucharest Convention") was signed in Bucharest in April 1992;
- it is the basic legal framework for regional cooperation to protect the coastal and marine environment.

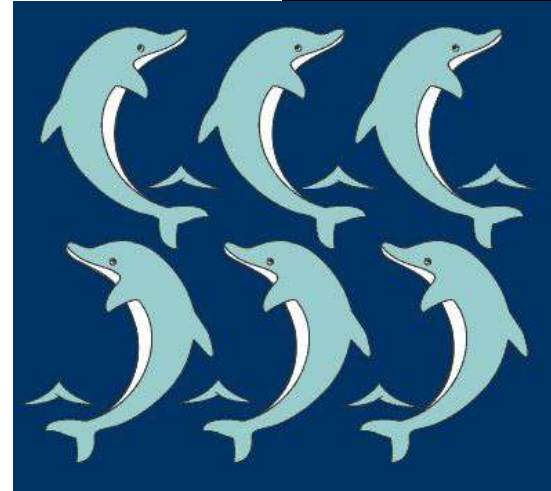
| Country | Signed | Ratified | Entry into force |
|---------|------------|------------|------------------|
| Ukraine | 21-04-1992 | 14-04-1994 | 14-04-1994 |

- Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (Istanbul, Turkey, 30 - 31 October 1996, (June 22-26 2002, Sofia)

Commission on the Protection of the Black Sea Against Pollution

is established in implementation of the Convention on the Protection of the Black Sea Against Pollution, (as defined in Article XVII). It is often referred to shortly as the Black Sea Commission, and more rarely as the Istanbul Commission.

- The Permanent Secretariat
- Activity Centers (AC) PMA Pollution Monitoring and Assessment, Odessa, Ukraine
- Advisory Groups
- Work Groups



Bucharest Convention



Bucharest Convention was elaborated 25 years ago, latest version of BS SAP is dated 2009, some new challenges as climate change, marine litter, marine noise, green economy, MSFD requirements (definition of GES) etc. were not reflected;

Work to incorporate these considerations in the documents of the Bucharest Convention (text of Convention, BS SAP, BSIMAP etc.);

Relevant chapters of Black Sea SoE and SAPIR include socio-economic aspects and new challenges;

30 datasets contribute to the indicators relevant to MSFD which are hosted by BSC and Regional Activity Centre for Pollution Monitoring and Assessment (PMA RAC) in Odessa (Ukraine), activities shall be sustained.

Progress (1)



Short format of reporting elaborated and adopted (based on indicators agreed by consensus (E-TRIX, BEAST, H-Shannon 95 (biomass), Landings per unit of effort etc., compatible with MSFD, GFCM, ACCOBAMS and global approach to indicators (UNEP) and SDGs);

Black Sea Integrated Monitoring and Assessment Program - BSIMAP for years 2017-2022 (drafted within EU MSFD Project, main approaches are harmonized, definition of GES and descriptors, reporting format to ICPDR, data-bases for harmonization, priority studies) was adopted in October, 2016;

First Report on the Implementation of the (amended) BS SAP (2009) – SAPIR and “State of the Black Sea Environment” Report – SoE are being drafted – thanks to EMODNet!!!

Progress (2)



Work on incorporation of deliverables of relevant projects (EMBLAS, DEVOTES, PERSEUS, IRIS-SES, EMODNET, Baltic2Black, MSFD, MISIS etc.);

Implemented SSFA of UNEP on Marine Litter – draft RAP on ML and ML Monitoring Guidelines;

Signature of the MoU between UNEP/MAP and BSC PS – project on ML (ML monitoring programme for BS);

Signature of Practical Arrangements with IAEA on QA/QC (cooperation in the Area of Strengthening Data Quality Assurance in the Analysis of Contaminants in the Black Sea Marine Environment, first results of the PT in 2016) 6 and 12 BS labs participated in the proficiency tests already!!!

Indicators for short reporting:



During the 31st BSC Regular meeting the BSC adopted the 6 tables reflecting the indicators for annual reporting to the Black Sea Commission, elaborated and agreed by the members of the all six Advisory Groups of the Black Sea Commission during their regular meetings in 2015.

The data is based on existing AG annual reporting formats, and also takes into account the new environmental challenges and legislation, as well as approaches introduced by relevant global and regional organizations (i.e. provisions of EU MSFD; GFCM; ACCOBAMS etc.)

BSIMAP 2017-2022 (2)



Content

- Annex 1** Black Sea Regional Monitoring Program
- Annex 2** Relevant data-bases for possible future harmonization with BSIS
- Annex 3** Proposed organizational scheme and time-table for preparation of the assessment reports
- Annex 4** BSIMAP Reporting format (to be added when revised by the BSC and Advisory Groups (AGs))
- Annex 5** List of the Black Sea Guidelines and Manuals
- Annex 6** List of Black Sea priority substances
- Annex 7** Environmental Quality Standards for Priority Substances and certain other pollutants
- Annex 8** Substances subject to review for possible identification as priority substances or priority hazardous substances
- Annex 9** Priority thematic studies to be implemented in 2015-2020. Subjects for international and

Новітні методи спостережень та аналізу стану морського довкілля

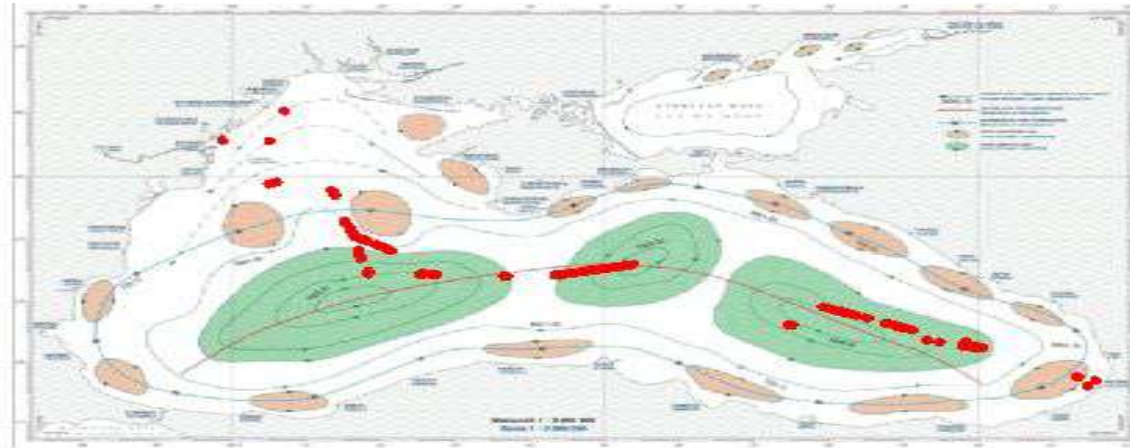


- «Non-target» скринінг (NORMAN DSFP)
- Морське / річкове сміття (EC JRC)
- Мікропластик (UoF, UBA and BAM Germany)
- Пасивний відбір (RECETOX/NIVA)
- ДНК (eDNA) – риба, фітопланктон, зоопланктон, бактерії... (NIMRD Romania, University of Nanjing, DNAquaNet)
- Супутникові спостереження
- Методи математичного моделювання, СУБД та ГІС

Експедиційні спостереження та дослідження



Спостереження за сміттям





Environmental Monitoring in the Black Sea



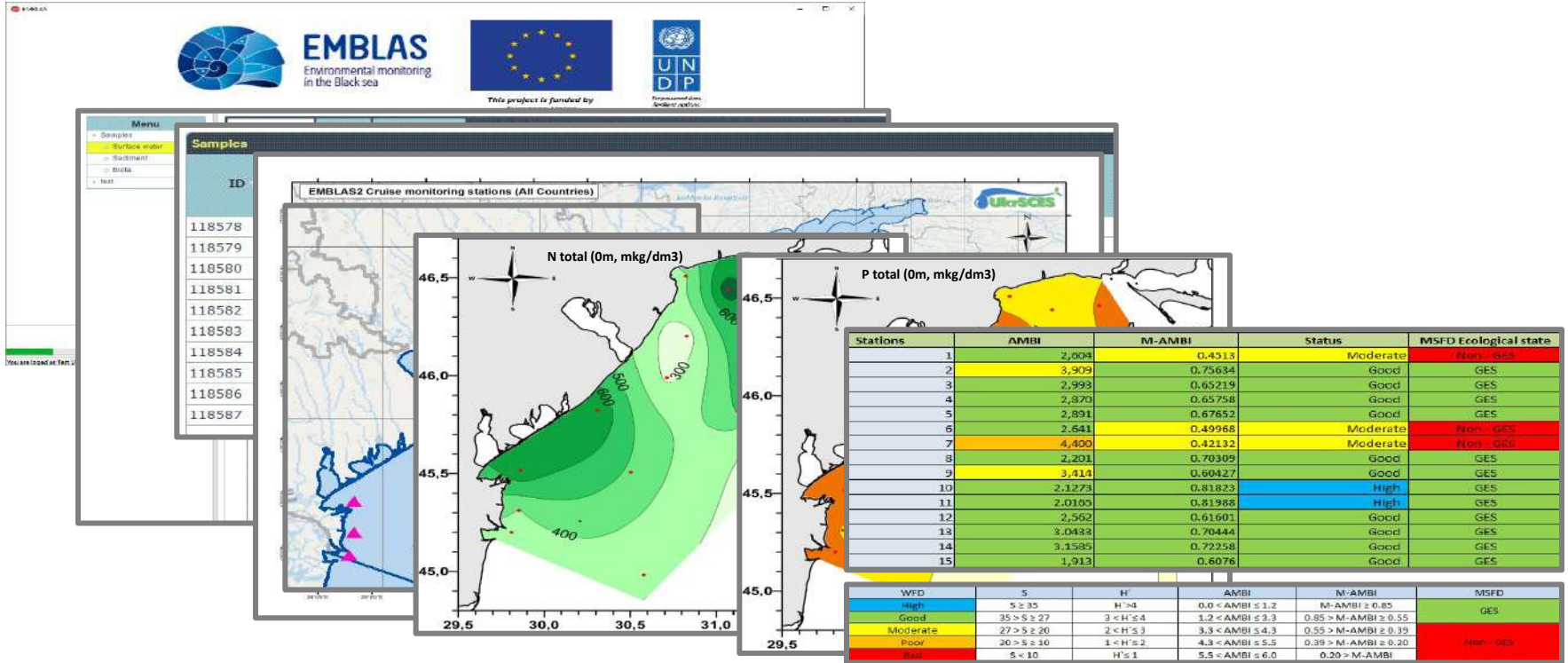
This project is funded by the European Union



Empowered lives. Resilient nations.



Інформаційне забезпечення





Environmental
Monitoring in the

Black Sea

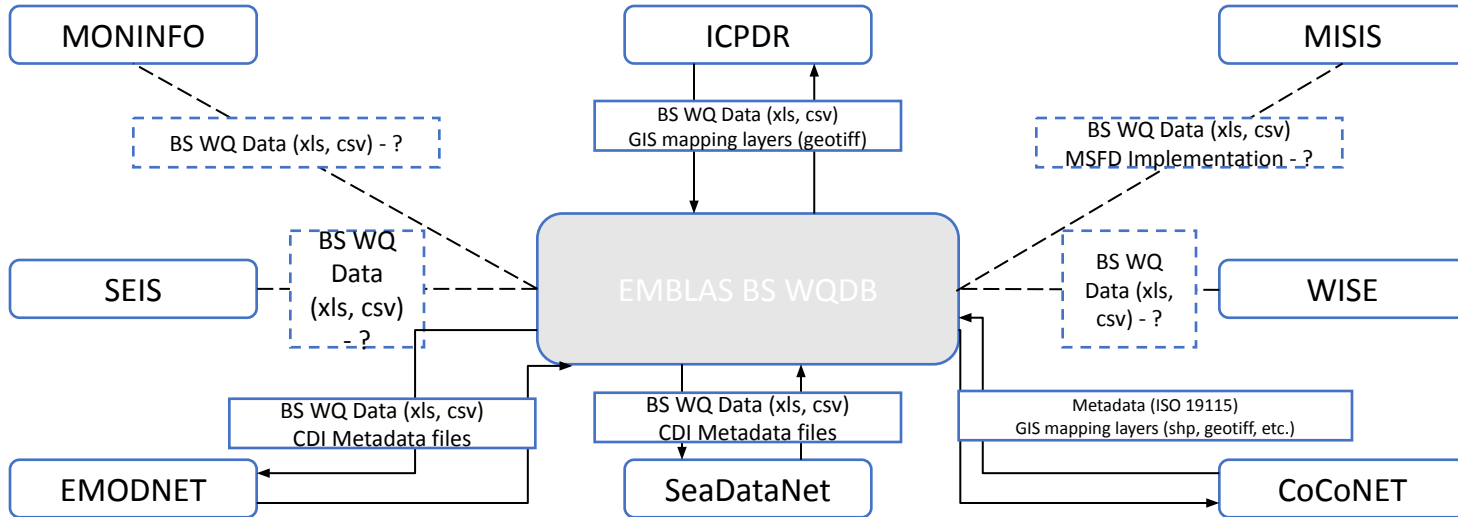
Міжнародна база даних BS WQDB - УкрНЦЕМ



This project is funded
by the European Union



Empowered lives.
Resilient nations.



<http://blackseadb.org/login.php>: >200,000 data entries

Біорізноманіття: Фітопланктон, зоопланктон: макро-/мікро-/мезо-, Макрозообентос, Мейобентос, Макрофітбентос

Евтрофікація: загальні фізико-хімічні показники, біогенні речовини

Забруднення: вода, донні відклади та біота

Difference between hydrobiological and MFSD monitoring

Assessment

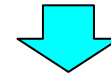


Hydrobiological
Monitoring



Structure-functional
organization of biological
community

MFSD
Monitoring



Ecological
Status Class

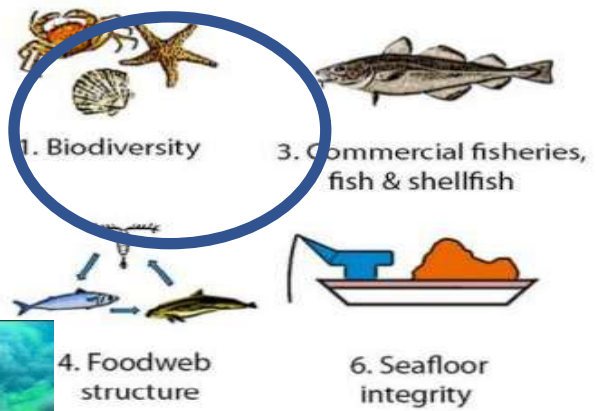


Phytoplankton

indicators of potential surveillance MSFD



Zooplankton



Phytobenthos



Zoobenthos





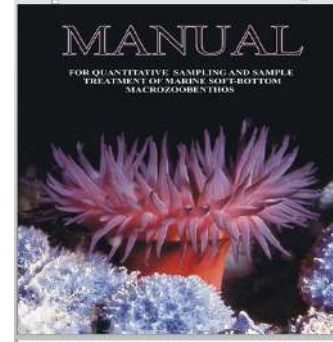
BLACK SEA INTEGRATED MONITORING AND ASSESSMENT PROGRAM

for years 2015-2020

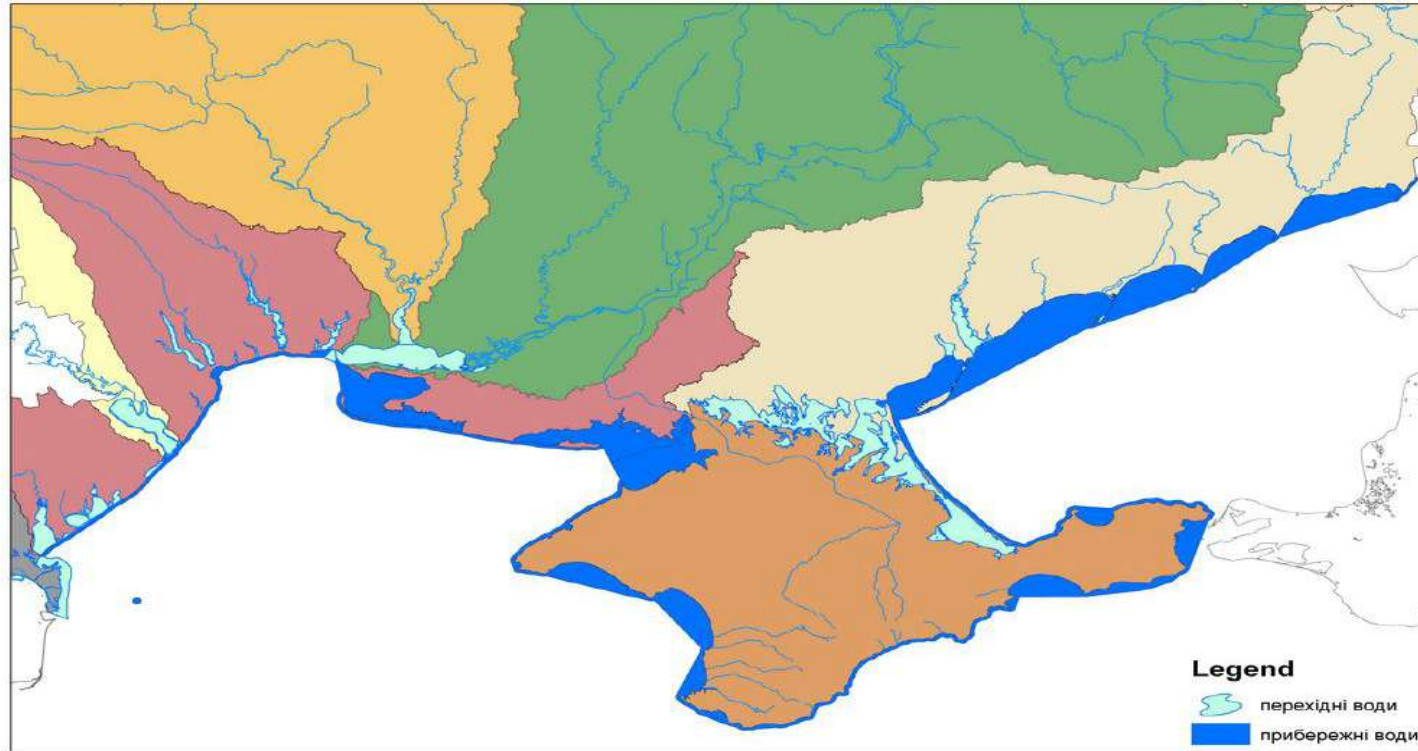
(BSIMAP 2015-2020)



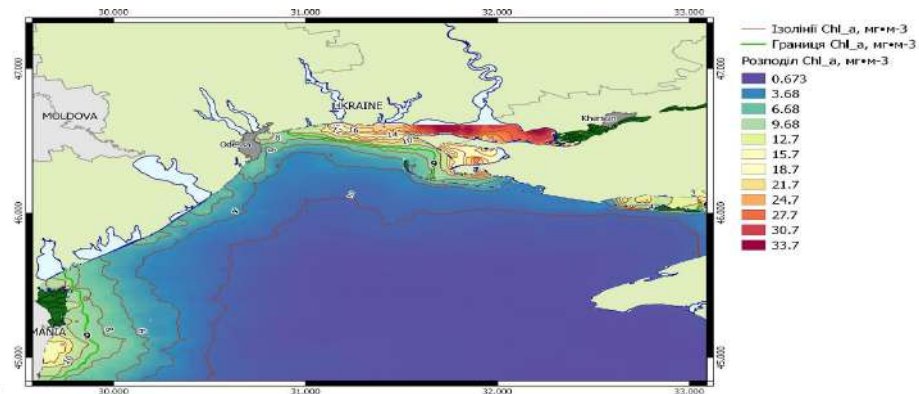
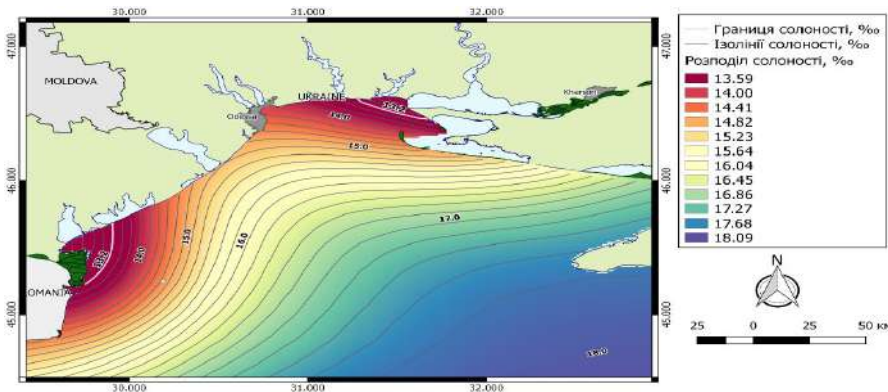
Biological Guidelines



Delimitation of the boundaries of marine monitoring waters of Ukraine



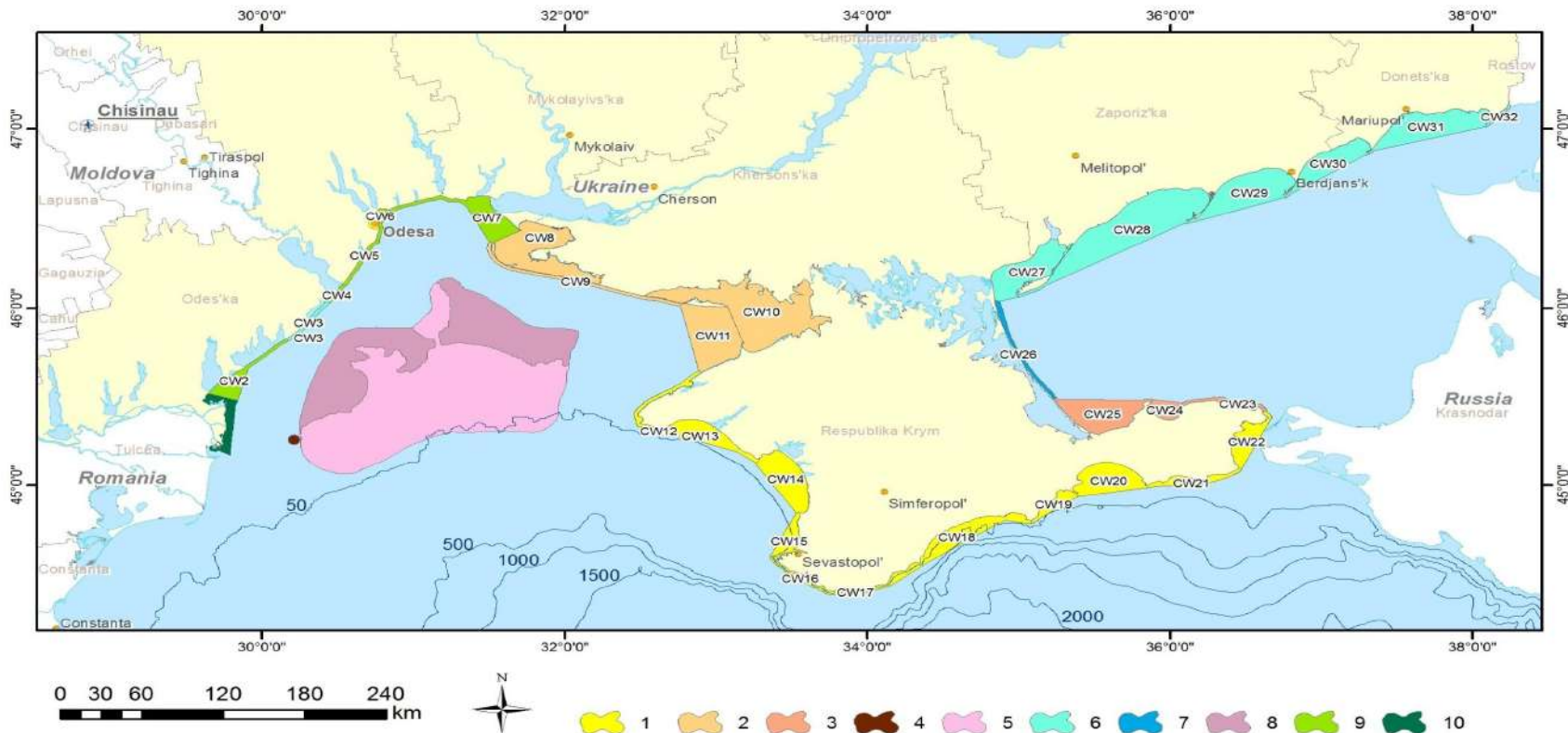
Average long-term data on the distribution and correlation between salinity and concentration of chlorophyll "a"



Coastal water bodies for the Black and Azov Sea sectors of Ukraine



Sub-regions of the Ukrainian sector of the Black and Azov Seas, distinguished by the ecological activity of the dominant vegetation of the bottom (S / W3Dp)

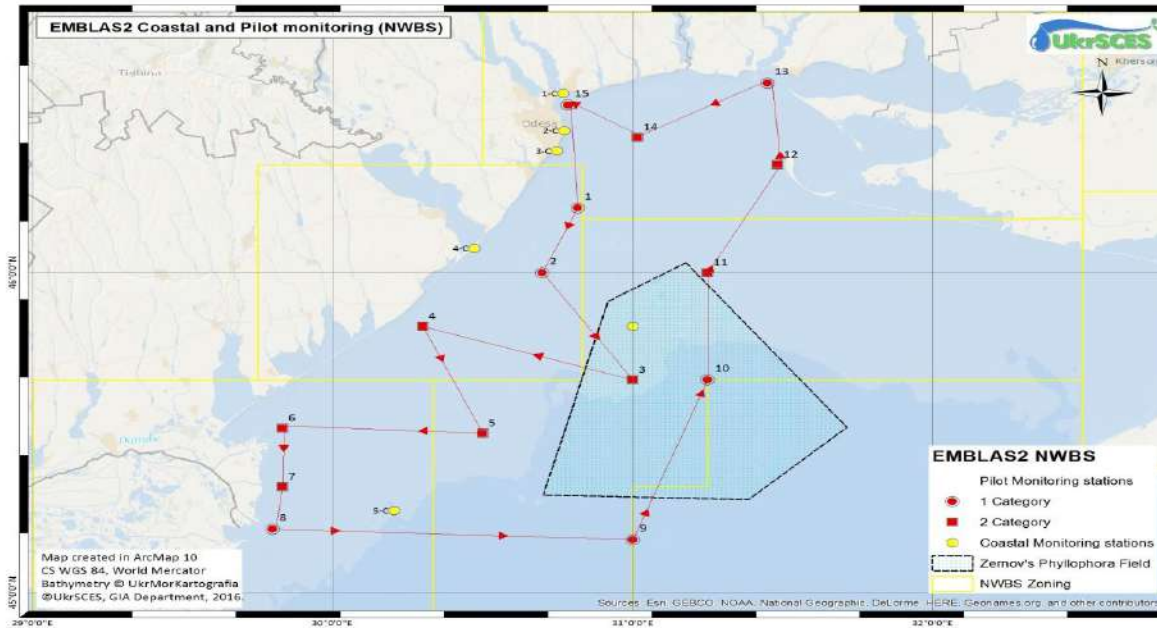


Network stations of the RV “Mare Nigrum” (Rumania) of the Ukrainian National Pilot Monitoring Surveys (NPMS) (May 2016)



EMBLAS

Environmental monitoring
in the Black sea



Progress in the development of national scales for assessing the ecological status class (ESC) on based of phyto- and zooplankton communities

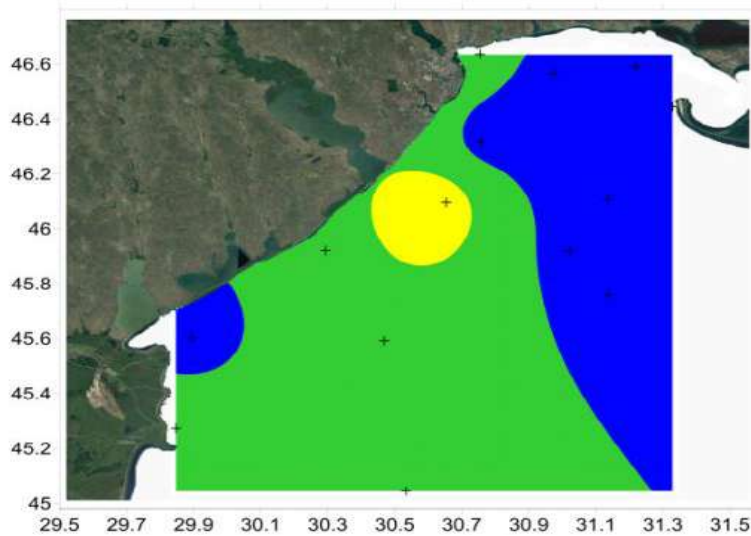
Integral phytoplankton index (IPI)

| Marine coastal waters | | Transition waters ($S < 14 ‰$) | |
|-----------------------|---------------|----------------------------------|---------------|
| Water quality | IPI value | Water quality | IPI value |
| High | > 0,760 | High | > 0,664 |
| Good | 0,760 - 0,511 | Good | 0,664 - 0,552 |
| Moderate | 0,510 - 0,378 | Moderate | 0,551 - 0,516 |
| Poor | 0,377 - 0,286 | Poor | 0,515 - 0,479 |
| Bad | < 0,286 | Bad | < 0,479 |

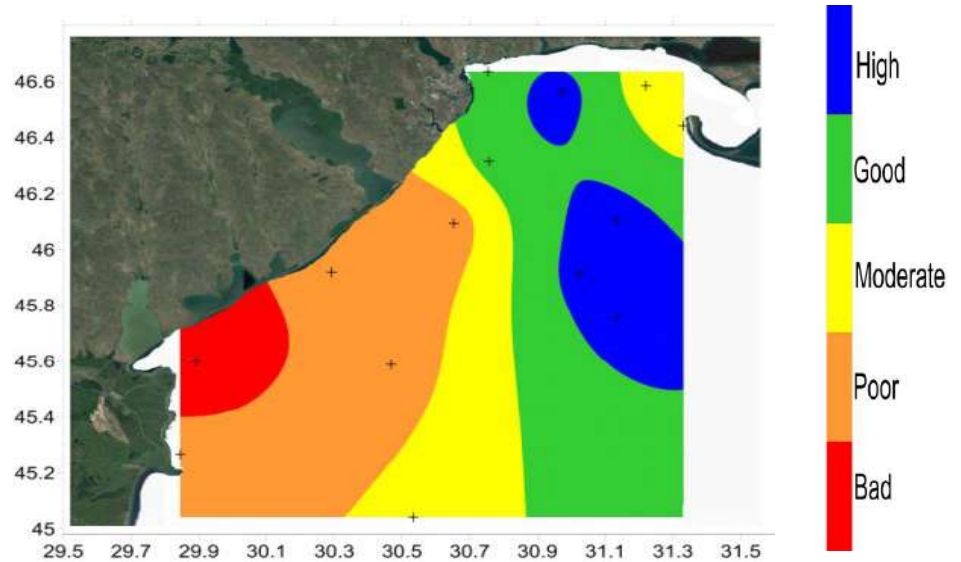
Integral zooplankton index (IZI)

| Marine coastal waters | | Transition waters ($S < 14 ‰$) | |
|-----------------------|---------------|----------------------------------|---------------|
| Water quality | IZI value | Water quality | IZI value |
| High | > 0,718 | High | > 0,742 |
| Good | 0,718 - 0,676 | Good | 0,742 - 0,612 |
| Moderate | 0,675 - 0,637 | Moderate | 0,611 - 0,509 |
| Poor | 0,636 - 0,313 | Poor | 0,508 - 0,468 |
| Bad | < 0,313 | Bad | < 0,468 |

Distribution of environmental state color coded categories based on phytoplankton biomass and chlorophyll "a" in NPMS-UA

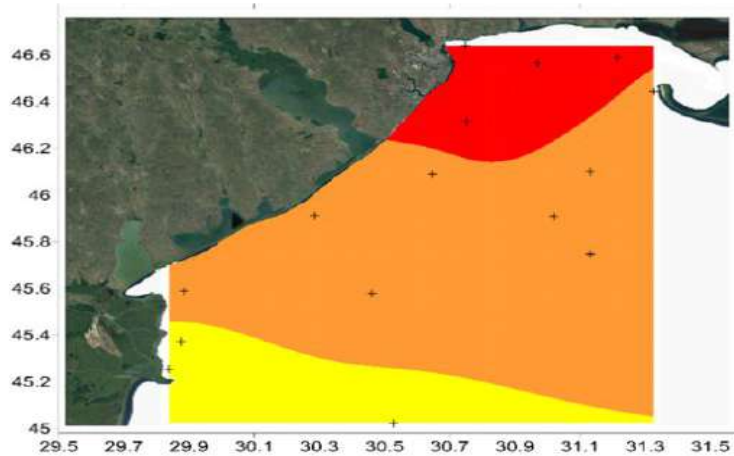


Biomass (mg/m³)

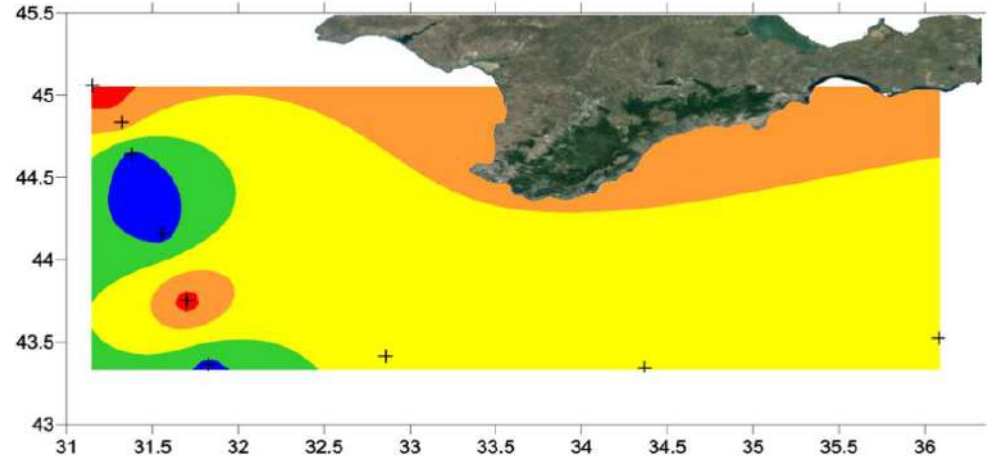


Chlorophyll a (mkg/l)

Spatial distribution of water quality at mesozooplankton biomass in the surface layer of the Black Sea



**Northwestern shelf
(NPM UA)**



Open sea area

Quality assessment scales for identification of the Ecological Status Class of coastal areas of the Black Sea salinity on basis macrophytes indicators

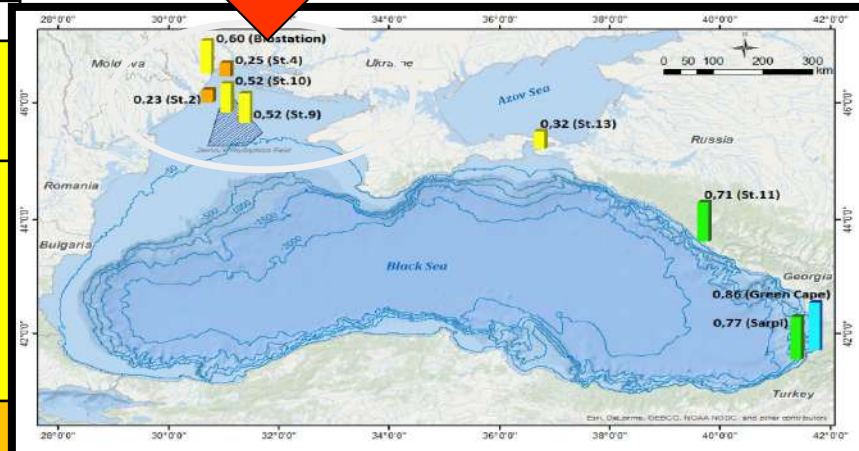
| ESC | EEI range | | | | | |
|-----------------|-------------------------------|-------------|-----------------------------|-------------|---------------------------|-------------|
| | $(S/W)_{3dp}, m^2.kg^{-1}$ | EQR | $(S/W)_x, m^2.kg^{-1}$ | EQR | $SI_{ph}, units$ | EQR |
| High | $(S/W)_{3dp} < 15$ | ≥ 0.82 | $(S/W)_x < 60$ | ≥ 0.98 | $SI_{ph} < 25$ | ≥ 0.93 |
| Good | $15 \leq (S/W)_{3dp} \leq 30$ | 0.54 | $60 \leq (S/W)_x \leq 80$ | 0.79 | $25 \leq SI_{ph} \leq 40$ | 0.61 |
| Moderate | $31 \leq (S/W)_{3dp} \leq 45$ | 0.37 | $81 \leq (S/W)_x \leq 120$ | 0.58 | $41 \leq SI_{ph} \leq 55$ | 0.41 |
| Poor | $46 \leq (S/W)_{3dp} \leq 60$ | 0.25 | $121 \leq (S/W)_x \leq 200$ | 0.17 | $56 \leq SI_{ph} \leq 90$ | 0.22 |
| Bad | $(S/W)_{3dp} > 60$ | ≥ 0 | $(S/W)_x > 200$ | ≥ 0 | $SI_{ph} > 90$ | ≥ 0 |

Assessment of the ESC of Ukrainian monitoring stations on the basis of macrophytes morphofunctional indicators

| Place sampling | ESC by value of m-f indicators | | | | | | ESC by average EQR of m-f indicators |
|----------------|---|-----|--|-----|----------------------------|-----|--------------------------------------|
| | S/W _{3Dp'} m ² ·kg ⁻¹ | EQR | S/W _x m ² ·kg ⁻¹ | EQR | SI _{ph'} units | EQR | |

| Ukraine | | | | | | | |
|--|-------|------|-------|------|-----------------------------|------|-----------------|
| Odessa coast (Biostaion) | 44,8 | 0,37 | 89,5 | 0,63 | 42,7 | 0,81 | 0,60 (Moderate) |
| Zer-nov's Phyl-lophora Field, NPMS (St.9,10) | 58,3 | 0,25 | 60,1 | 0,79 | Absent represent ative data | - | 0,52 (Moderate) |
| Dnister region NPMS (St.2) | 124,7 | 0,18 | 136,5 | 0,28 | Absent represent ative data | - | 0,23 (Poor) |
| Damping region, NPMS (St.14) | 119,4 | 0,20 | 134,2 | 0,29 | Absent represent ative data | - | 0,25 (Poor) |

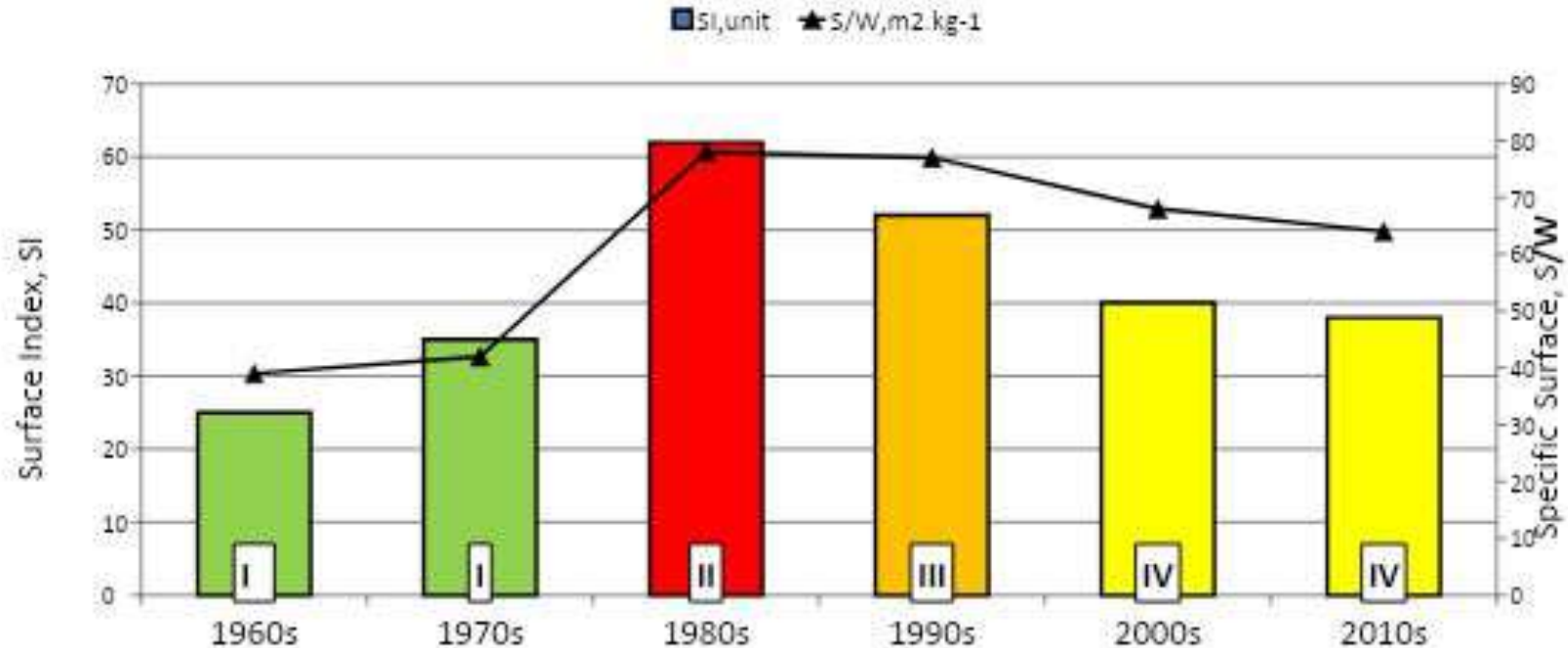
Not GES



Intensive influence of three bigger European rivers: Danube, Dnieper and Dniester

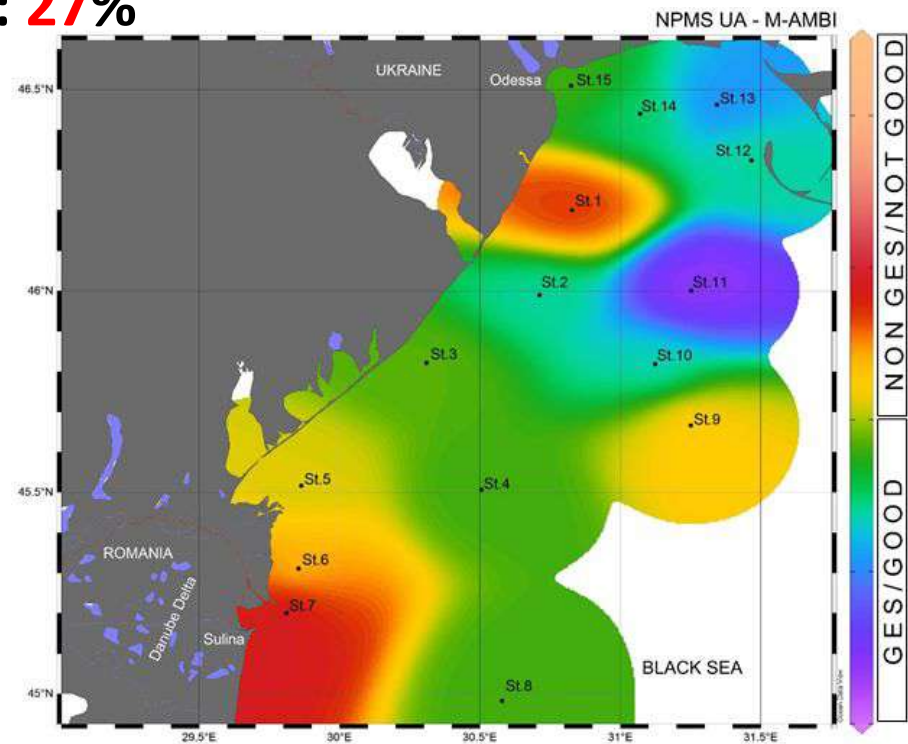
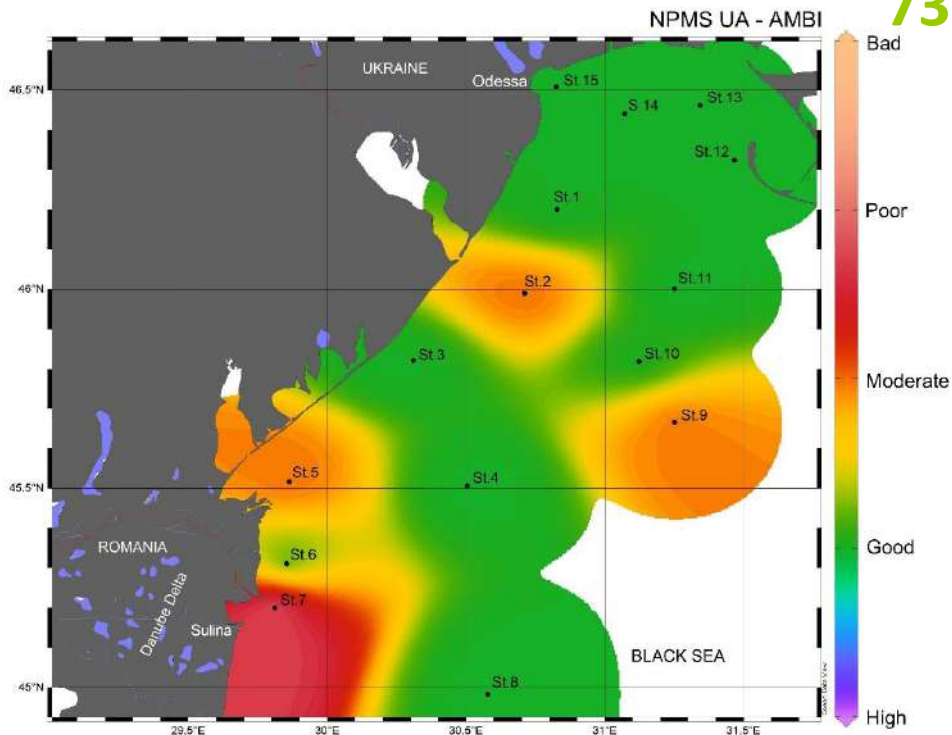
Historical stages of eutrophic status in the north-west Black Sea shelf:

I - natural state, II- intensive eutrophication,
 III – immobility, IV- steady trend of de-eutrophication



THE RATIO OF **GES/** **NOT GES** IN UKRAINIAN REGION:

73 : 27%



Distribution map of **AMBI** values and environmental status of habitats

Distribution map of **M-AMBI** values and environmental status of habitats

UK Expert – Dr. *Kovalishina Svetlana* RO Expert *Teca Adrian*



Convention on the Conservation of European Wildlife and Natural Habitats

- The Bern Convention is a binding international legal instrument in the field of nature conservation, covering most of the natural heritage of the European continent and extending to some States of Africa.
- Ukraine acceded to this convention in 1996. The Emerald Network is a system of protected areas and their management that are of particular value for the conservation of natural species of flora, fauna and habitat types (Areas of Special Conservation Interest, ASCI)



Association Agreement between the European Union and Ukraine

The political part of the Association Agreement as well as the Final Act of the Summit was signed by the Prime Minister of Ukraine Arseniy Yatsenyuk during the extraordinary EU – Ukraine Summit held on March 21, 2014.

Annex XXX to the Association Agreement defines the need to implement the provisions of Directive No 2008/56 / EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy. (Marine Strategy Framework Directive)





EU Project Association4U is the hand of help to Ukrainian government institution in the implementation of the EU-Ukraine Association Agreement

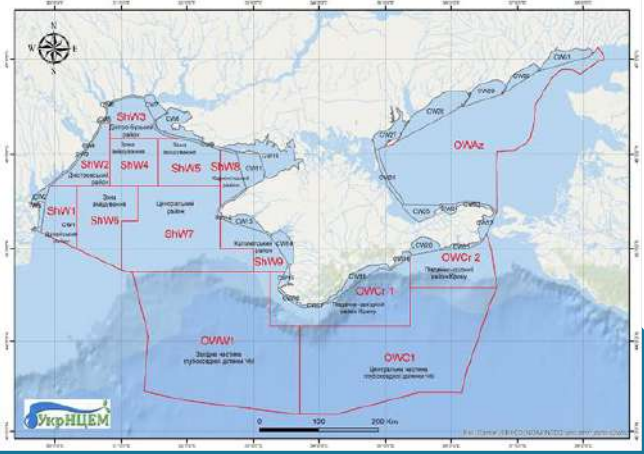
Task: Preparation of Draft of National Maritime Strategy (2016-2019)

Marine Environmental Strategy of Ukraine

The purpose of the Marine Strategy is to conserve and restore marine resources by initiating systematic and optimal approaches to the organization and implementation of state management of the environment of the Azov and Black Seas within inland waters, territorial sea, exclusive (marine) economic zone of Ukraine and coastal seas to achieve and support of GOOD ECOLOGICAL CONDITION of the marine environment.

Cabinet of Ukraine, October, 2021





Marine Environmental Strategy of Ukraine

- Annex 1 - ROAD MAP
- Annex 5 - Marine water bodies
- Annex 4 - Program of measures
- Annex 6 - GES Descriprots

| Морські водні тіла | Сезон | Стан морського середовища за біомасою фітопланктону (мг/м ³) | | | | |
|---|-------|--|-----------|-------------|------------|---------|
| | | Відмінний | Добрий | Задовільний | Посередній | Поганий |
| CW3, CW4, CW5, CW6, CW7 (див. табл.1.1 Додатку 1) | зима | <1100 | 1100-1400 | 1400-2000 | 2000-4000 | >4000 |
| | весна | <1400 | 1400-1700 | 1700-2500 | 2500-4700 | >4700 |
| | літо | <1100 | 1100-1400 | 1400-2000 | 2000-4000 | >4000 |
| | осінь | <1000 | 1000-1250 | 1250-1850 | 1850-3700 | >3700 |



Environmental Monitoring in the Black Sea



This project is funded
by the European Union

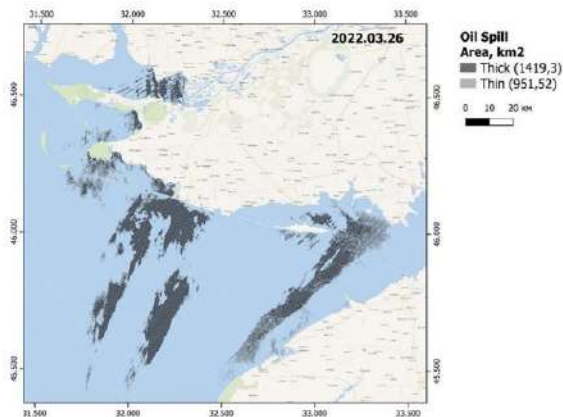


Engineering for
Sustainable
Development



- Рамкова Директива з Морської стратегії ЄС 2008/56/ЄС (MSFD)
- Морська природоохоронна стратегія України, схвалена розпорядженням Кабінету Міністрів України від 11 жовтня 2021 р. № 1240-р.
- Програми державного моніторингу морських вод, затверджена наказом Міндовкілля від 05.01.2022 №
- Порядок здійснення державного моніторингу вод, затвердженого Постановою Кабінету Міністрів України від 19 вересня 2018 р. № 758

Безпосередній вплив на морські екосистеми здійснюється в результаті



Трансформація нафтових плям на морських охоронюваних акваторіях НПП «Білобережжя Святослава», Чорноморського біосферного заповідника та державного заказника Каркінітський на 10-й день після збиття ЗСУ двох російських літаків Су-30, 16 березня 2022 р (за інформацією директора Інституту морської біології НАН України - член-кор.НАН України Мінічевої Г. Г.)

- Маневрування військових суден
- Запуски ракет з суден та підводних човнів (скиди горючого палива (газів), у т.ч. невдалі запуски ракет, що залишилися в морі
- Затоплення суден в результаті воєнних дій, затоплення боєприпасів із радіоактивними та/або хімічно активними складовими
- Забруднення уламками літаків та ракет, збитих над морською поверхнею, радіоактивне забруднення морського довкілля підводними човнами з ядерними установками (небезпеку становлять як компоненти відпрацьованого ядерного палива, так і радіаційно забруднені корпуси атомних підводних човнів, утилізація яких здійснюється за високою вартістю)
- Мінування акваторій, постріли, вибухи
- Дія судових радарів (зокрема, підводних човнів)

Conclusions:



- **The proper implementation of the BSIMAP 2017-2022 will allow to unify the set of core indicators and compliance with national, regional and international requirements (BS national legislation, MSFD provisions, BS SAP 2009 etc.);**
- **Help to avoid ambiguities of the integrated monitoring in BS countries, amend the BS SAP 2009 and possibly text of Bucharest Convention, assist Ukraine, Georgia and Turkey in approximation to the European environmental legislation;**
- **Meanwhile MSFD-related Projects play their crucial role in assisting BG and RO in reporting under MSFD requirements ensuring unification of approaches between the regional seas and cooperation with RSCs Secretariats (UNEP/MAP MoU), application of best practices, as well as introduction of new tools for marine assessment in the Black Sea;**
- **MSFD-related Projects help to a large extent to deepen our cooperation and exchange of experience with other RSCs and BSC observers/partners, as well as provided concrete tools for monitoring and assessment of environment, implementation of MSFD provisions and GES achievement.**
- **At the same time, proper sustainability of project deliverables should be ensured, BSC PS stands ready to ensure that the results are taken into account and supported by experts in the Black Sea basin.**

Thank you

rubeloleg@gmail.com

bsnn.org